

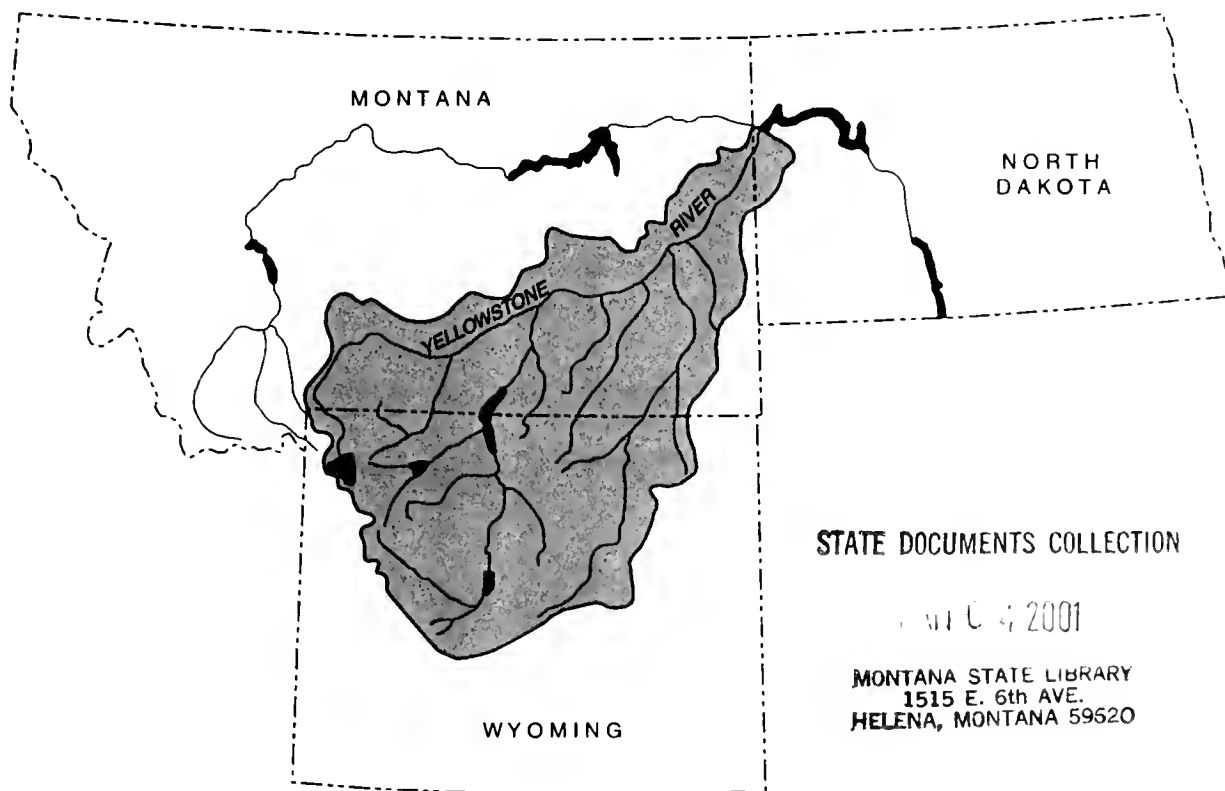
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YELLOWSTONE RIVER COMPACT COMMISSION

WYOMING

MONTANA

NORTH DAKOTA



FORTY-NINTH ANNUAL REPORT
2000

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YELLOWSTONE RIVER

COMPACT COMMISSION

FORTY-NINTH ANNUAL REPORT

2000

YELLOWSTONE RIVER COMPACT COMMISSION
DENVER FEDERAL CENTER, BUILDING 53, ROOM F-1200
LAKEWOOD, COLORADO 80225

Honorable Jim Geringer
Governor of the State of Wyoming
Cheyenne, Wyoming 82002

Honorable Marc Racicot
Governor of the State of Montana
Helena, Montana 59620

Honorable Edward T. Schafer
Governor of the State of North Dakota
Bismarck, North Dakota 58501

Dear Sirs:

Pursuant to Article III of the Yellowstone River Compact, the Commission submits the following forty-ninth annual report of activities for the period ending September 30, 2000.

Members of the Yellowstone River Compact Commission convened their forty-ninth annual meeting on December 5, 2000 at 10:00 a.m. in Sheridan, Wyoming. In attendance were Mr. James Kircher, U.S. Geological Survey, Chairman and Federal Representative; Mr. Jack Stults, Administrator, Water Resources Division, Montana Department of Natural Resources and Conservation, and Commissioner for Montana; and Mr. Richard Stockdale, Acting Wyoming State Engineer and Acting Commissioner for Wyoming. Also in attendance were Mr. Keith Kerbel and Mr. Jim Robinson, Montana Department of Natural Resources and Conservation; Mr. Art Compton, Montana Department of Environmental Quality; Ms. Sue Lowry, Mr. Carmine LoGuidice, and Mr. Ron Vore, Wyoming State Engineer's Office; Mr. Tom Davidson, Wyoming Attorney General's Office; Mr. Mike Whitaker and Mr. Craig Cooper, Wyoming Board of Control; Ms. Maggie Davison and Mr. Gary Beach, Wyoming Department of Environmental Quality; Mr. Barry Lawrence, Wyoming Water Development Office; Mr. Stephen Pollock, Bureau of Indian Affairs; Mr. Tom Quinn and Mr. Robert Davis, U.S. Geological Survey; Ms. Anne MacKinnon, water-law historian (Casper); Mr. Wade Irions, MSE-HKM Consultants (Billings); Ms. Jill Morrison, Powder River Basin Resources Council (Sheridan); Mr. Robert Brug (Casper); and Mr. J.R. Mitchell, Sheridan County Conservation District.

All attendees introduced themselves.

Mr. Davis presented information on budgets for the program of streamflow data collection and preparation of the annual report. The program cost was \$58,000 for fiscal year 2000 and will be \$61,600 for fiscal year 2001. Estimated costs for future years are \$64,700 for fiscal year 2002, \$67,900 for fiscal year 2003, and \$71,300 for fiscal year 2004. One-fourth of the program cost is provided by the State of Wyoming,

one-fourth by the State of Montana, and one-half by the U.S. Geological Survey through the Cooperative Water Program. The program for fiscal year 2001 was approved.

Mr. Davis reported that streamflow during water year 2000 was 85 percent of average for the Clarks Fork Yellowstone River, 68 percent of average for the Bighorn River (adjusted), 57 percent of average for the Tongue River, and 54 percent of average for the Powder River. Total adjusted streamflow in the 4 rivers was 3,200,100 acre-feet during water year 2000. Anchor Reservoir and Tongue River Reservoir had more water in storage at the end of water year 2000 than at the end of water year 1999. Bighorn Lake, Boysen Reservoir, Bull Lake, Pilot Butte Reservoir, and Buffalo Bill Reservoir all had less water in storage at the end of water year 2000 than at the end of water year 1999. The total usable contents of the reservoirs at the end of water year 2000 was 1,876,100 acre-feet, which represents a decrease of 430,900 acre-feet from the end of water year 1999.

Mr. Stults asked why the Powder River streamflow-gaging station was located about 30 miles upstream from the mouth rather than nearer the mouth. Mr. Davis subsequently researched the issue and later reported to the Commissioners that the location was selected on the basis of stream-channel stability, the existence of a bridge for high-flow measurements, and the existence in 1952 of a gaging station at that location. The first annual report of the Yellowstone River Compact Commission for the period ending September 30, 1952, states "The existing station three miles upstream from Locate Creek and known as the Powder River near Locate, Montana, has been temporarily designated as the point of measurement. Location of a new gage nearer the mouth of the Powder River was not considered justifiable since the present extent of allocable water use is minor."

The Commissioners discussed the need for quantifying diversions and other hydrologic factors in order to administer the Compact, and agreed to establish a committee to provide recommendations to the Commissioners on possible future efforts. The committee will consist of Mr. Richard Moy and Ms. Sue Lowry as co-chairpersons along with technical personnel to be designated by the co-chairpersons. The committee is tentatively scheduled to meet during the spring with the goal of having an estimate of what effort is needed to the commissioners by May 2001.

Mr. Stults reported on the Montana Drought Response Plan, which was developed during the early 1990's. As part of the plan, a Drought Advisory Committee was established, with broad representation from approximately 20 entities. Additional information is available through links at web site www.dnrc.state.mt.us/wrd/home.htm. Montana tried to be proactive during the 2000 drought with regard to resource planning and providing assistance. Governor Racicot issued an Executive Order that expedited the process for the water-leasing program to help maintain instream flows and asked for cooperation from water users to help maintain those instream flows. Water users were very responsive. Watershed-management groups were instrumental in helping to manage resources during the drought. As a result of all of these efforts, hydrologic conditions and aquatic habitat were better maintained during 2000 than in 1994, even though the 2000 drought was more severe.

Mr. Stockdale reported that Wyoming has no formal drought-response plan, but did develop a Drought Task Force. Many of the drought-related responsibilities and activities were accomplished by local Wyoming water administrators. Adequate water for stock was a major concern. Use of water for fire-

fighting efforts resulted in problems in some areas. The Wyoming Drought Task Force will meet again during the week of December 11, 2000 and will consider developing a more formal drought-response plan, which could have a risk-assessment component or basis modeled after the Texas plan. At present, the statutory and technical tools available in Wyoming do not allow for developing a plan as extensive or comprehensive as the Montana plan. Mr. Stults commented that Montana's water-leasing program protects the instream water from use by junior water-rights holders downstream. The water-leasing program has no monetary aspect at present, although an assistance program for infrastructure or equipment upgrades related to drought is being considered. He also stated that emergency use of water, such as for fire fighting, can be allowed.

Mr. Davidson reported that the Wyoming District Court judge issued a decision on Walton Rights claims for the Wind River Indian Reservation. These water-rights claims were quantified and the use is specified as appurtenant to the land. The Tribal government disputed the amount quantified and has requested an increase. Wyoming will administer the rights, with limited restrictions. The water rights of private claimants for lands within the Reservation were settled by agreement, with the exception of the issue of appurtenancy. Ground water was not part of the decreed rights, but the Tribes have been ordered to document current ground-water usage. Ground-water rights can be applied for and granted as for any other Wyoming water right.

Mr. Stults reported that Montana has no formal plan for water conservation but some localized efforts exist. Mr. Kerbel described efforts for Buffalo Rapids near Terry, Huntley Project, Cartersville, and Intake. Mr. Stockdale stated that Mr. Jeff Fassett had been working with a diverse group in Wyoming to address the concept of salvage water. However, State legislation on salvage water has been tabled for the present. Ms. Lowry provided background information on conservation efforts in Wyoming. Mr. Vore stated that he is working closely with water users, particularly in areas of water deficiencies, to promote voluntary participation in conservation efforts such as increasing efficiencies and storage capabilities. A directory of sources of technical and financial assistance has been compiled. Public outreach and education has been a focus of efforts. Mr. Stults stated that Montana has a salvage-water statute and, if the actual salvage is proven, users can designate the use of the salvage water.

Mr. Stults reported on coal-bed methane development in Montana. The produced water is not subject to water-rights permitting by the Montana Department of Natural Resources and Conservation, Water Resources Division, because it is considered a byproduct, but the area favorable for coal-bed methane development has been designated as a Controlled Ground-Water Area. As such, hydrologic mitigation and monitoring plans are required for development areas. A Technical Advisory Committee provides advice and recommendations to the Board of Oil and Gas regarding those plans, which are included as part of the overall development permit. Mr. Compton reported that the Tongue and Powder Rivers are considered impaired under Section 303 of the Clean Water Act and, therefore, Total Maximum Daily Loads are being developed for both rivers. A permit has been approved for coal-bed methane development by Redstone Gas Partners which allows for discharge of as much as 1,600 gallons per minute of produced water from 75-140 wells to the Tongue River. The permit expires in March 2002. The Bureau of Reclamation, Montana Department of Environmental Quality, and Montana Department of Natural Resources and Conservation (Board of Oil and Gas) are jointly preparing an Environmental Impact Statement for coal-bed methane development in southeastern and south-central Montana. At present, temporary exploratory permits are being granted but some changes to that process are being considered. The Departments of

Environmental Quality in Montana and Wyoming are working in collaboration to develop an agreement regarding discharge and water quality for the Tongue and Powder Rivers, particularly in relation to coal-bed methane development.

Mr. Stockdale reported that coal-bed methane development in Wyoming began in the late 1980's near Gillette and is expected to continue. Water-quantity issues are administered by the Wyoming State Engineer's Office and water-quality issues are administered by the Wyoming Department of Environmental Quality. To date, 6,200 wells have been drilled, of which about 3,000 are actually producing. Permits for 15,000 wells have been issued. Annual water discharge is estimated to be 40,000 acre-feet, although that estimate could have a large margin of error. The Wyoming State Engineer's Office has received \$300,000 to drill monitor wells and evaluate effects on ground water. Hydrologic issues include the potential for well interference, impoundments for discharges, local surface effects of discharges, and ponding. Governor Geringer has created a multi-agency working group to address issues. The effects of discharges on the quantity of water in perennial streams appears to be small, and less than originally estimated. However, the effects of discharges on the quality of water are more significant, particularly in the Powder and Tongue Rivers. Mr. Beach reported that most of the current permitting is in the Belle Fourche River basin, but increased development is anticipated for the Powder River basin and is expected to result in increased discharges and increased effects on water quality. At present, NPDES permitting in the Powder River and Tongue River basins is on hold, except for permits which include full discharge containment. Irrigation in the Powder River basin in Wyoming is primarily along tributaries, with very little irrigation using mainstem river water. Irrigation using mainstem water in Montana is feasible because of the diluting effects of Clear Creek on mainstem water quality, particularly in the spring months. Approximately 30,000-45,000 coal-bed methane wells are projected to be developed in northeastern Wyoming, including the Tongue, Powder, Little Powder, Belle Fourche, and Cheyenne River basins. Mr. Stults expressed the concern of irrigators in Montana about long-term effects of water-quality changes on soils. Mr. Beach stated that Wyoming has similar concerns, and a possible solution is to limit or eliminate discharges from wells to streams during the irrigation season. Mr. Davis reported on hydrologic monitoring in coal-bed methane areas in Montana and Mr. Quinn reported on similar monitoring in Wyoming. Involved parties and agencies in both States are maintaining close communications and coordinating activities.

Mr. Quinn reported that the Yellowstone River Basin National Water-Quality Assessment study is in the third and final year of high-intensity data collection. Low-intensity data collection will begin in 2002. Numerous reports on various aspects of the study are being prepared. Historical and recent data and other information for the study are available through the web site <http://wyoming/usgs.gov/YELL/index.htm>.

Mr. Kerbel reported on the Montana Statewide Adjudication. A decree for the Clarks Fork basin is nearly ready to be issued. Adjudication is being evaluated for the Bighorn and Little Bighorn River basins and has not yet begun for the Tongue River basin. Adjudication for the Powder River basin has been completed.

Mr. Lawrence and Mr. Irion reported on the Wyoming Water Planning Program. Planning is nearly complete for the Bear and Green River basins and is in process for the Powder and Tongue River basins. Geographic Information System coverages are being developed for the basins as part of the program.

Program elements include quantifying water uses and supplies, evaluating water shortages and surpluses, and estimating future water needs. Basin advisory groups are a very important part of the process. Mr. Stockdale reported that planning for the Wind/Bighorn and Salt/Snake River basins is expected to be authorized by the 2001 Wyoming Legislative session with the appropriation of \$1.2-1.5 million from the Water Development Accounts.

Mr. Robinson reported that two groups have been established to address issues of bank stabilization and cumulative effects for the Yellowstone River. The Upper Yellowstone River Task force was established by Governor Racicot to determine cumulative effects of bank-stabilization and channel-modification efforts. A study is in progress and the results will be published in a report. The Yellowstone River Conservation District Council was formed by 12 Conservation Districts for similar purposes.

Mr. Kerbel reported that a streamflow and lake-management plan for the Bighorn River basin has been developed in accordance with Crow-Montana Compact. Montana has ratified the plan and approval by the U.S. Congress is pending. If approved, the plan will be submitted to the Crow Tribe for their approval. Maintenance of instream flow for fisheries purposes is a major component of the plan and all available flow has been appropriated. Montana expressed a willingness to meet with Wyoming concerning the plan if Wyoming desires.

Ms. Lowry reported that correspondence occurred during the past year regarding the Sunlight Ranch petition for water rights. Mr. Kerbel stated that an application for water right needs to be filed with Montana because the point of use is in Montana, even though the point of diversion is in Wyoming.

Mr. Stockdale reported that supplemental information for the request for extension of three permits on Dry Fork has not been received by the Wyoming State Engineer. If no information is received by the end of 2000, the permits probably will be cancelled.

Mr. Stockdale stated that Texaco expressed interest in divesting their ownership of Lake DeSmet and offered it to the State of Wyoming. Wyoming did not accept the offer. The offer was extended to and accepted by the Joint Powers Board of Johnson, Sheridan, and Campbell Counties, along with 72 acres of land for development to help defray operation costs.

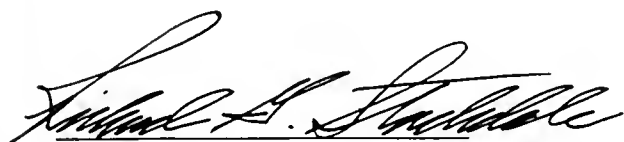
Mr. Stockdale reported that Mr. Jeff Fassett resigned his position as Wyoming State Engineer on June 15, 2000. Mr. Pat Tyrrell has been named as the new Wyoming State Engineer and will report for duty on January 16, 2001.

Mr. Stockdale stated that the State of Wyoming, along with the Campbell and Lake DeSmet Conservation Districts and County Commissions of Johnson, Sheridan, Converse, Carbon, and Campbell Counties, will be supporting a coal-bed methane coordinator position. The incumbent will serve as a liaison among interested parties and a clearinghouse for information.

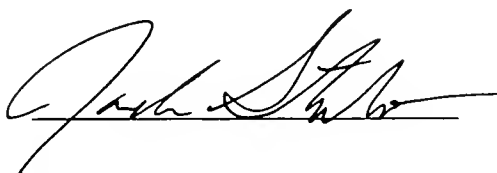
A field trip to the Montana parts of the Powder and Tongue River basins, including streamflow-gaging sites, will be considered. A tentative schedule for the week of August 20, 2001 was suggested. Mr. Kerbel, Mr. Whitaker, and Mr. Cooper will develop plans for consideration.

The next annual Commission meeting is tentatively scheduled for December 4, 2001, in Billings, Montana.

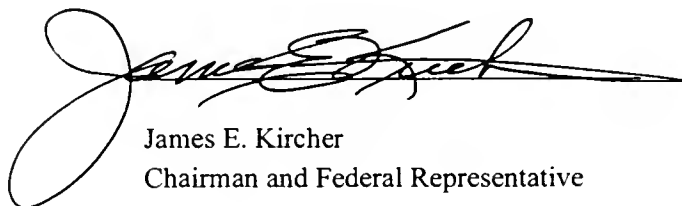
The meeting adjourned at 3:00 p.m.



Richard G. Stockdale
Acting Commissioner for Wyoming



Jack Stults
Commissioner for Montana



James E. Kircher
Chairman and Federal Representative

CONTENTS

	Page
Letter to Governors of signatory States.....	II
General report.....	1
Cost of operation and budget.....	1
Streamflow-gaging station operation.....	1
Diversions.....	2
Storage in reservoirs	2
Reservoirs completed after January 1, 1950	2
Reservoirs existing on January 1, 1950.....	2
Summary of discharge for Compact streamflow-gaging stations	3
Clarks Fork Yellowstone River at Edgar, Mont.....	3
Little Bighorn River near Hardin, Mont.	5
Bighorn River above Tullock Creek, near Bighorn, Mont.	6
Tongue River at Miles City, Mont.	9
Powder River near Locate, Mont.....	11
Monthly summary of contents for Compact reservoirs completed after January 1, 1950	13
Boysen Reservoir, Wyo.	13
Anchor Reservoir, Wyo.	14
Bighorn Lake near St. Xavier, Mont.....	15
Monthly summary of contents for Compact reservoirs existing on January 1, 1950.....	16
Rules and regulations for administration of the Yellowstone River Compact.....	17
Rules for the resolution of disputes over the administration of the Yellowstone River Compact	21
Rules for adjudicating water rights on interstate ditches	24
Claim form for interstate ditches.....	29
Conversion table.....	33

ILLUSTRATIONS

Plate 1. Map showing locations of Compact streamflow-gaging and reservoir-content stations	34
Figures 1-4. Graphs showing comparison of discharge during water year 2000 with discharge during water year 1999 and with 10-year and 30-year average discharges for:	
1. Clarks Fork Yellowstone River at Edgar, Mont.....	4
2. Bighorn River above Tullock Creek, near Bighorn, Mont.	8
3. Tongue River at Miles City, Mont.	10
4. Powder River near Locate, Mont.....	12

GENERAL REPORT

Cost of operation and budget

The work funded by the Yellowstone River Compact Commission, which to date has been primarily concerned with the collection of required hydrologic data, has been financed through cooperative arrangements whereby Montana and Wyoming each bear one-fourth of the cost and the remaining one-half is borne by the United States. The salaries and necessary expenses of the State and U.S. Geological Survey representatives, and the cost to other agencies of collecting hydrologic data, are not considered as expenses of the Commission.

The expense of the Commission during fiscal year 2000 was \$58,000, in accordance with the budget adopted for the year.

The estimated budgets for fiscal years 2001, 2002, 2003, and 2004, based on an approximate 5-percent increase per year, were tentatively adopted subject to the availability of appropriations.

The budgets for the five fiscal years are summarized as follows:

October 1, 1999, to September 30, 2000 (fiscal year 2000):

Operation of existing streamflow-gaging programs	\$58,000
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October 1, 2000, to September 30, 2001 (fiscal year 2001):

Estimate of continuation of existing streamflow-gaging programs	\$61,600
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October 1, 2001, to September 30, 2002 (fiscal year 2002):

Estimate of continuation of existing streamflow-gaging programs	\$64,700
---	----------

October 1, 2002, to September 30, 2003 (fiscal year 2003):

Estimate of continuation of existing streamflow-gaging programs	\$67,900
---	----------

October 1, 2003, to September 30, 2004 (fiscal year 2004):

Estimate of continuation of existing streamflow-gaging programs	\$71,300
---	----------

Streamflow-gaging station operation

Streamflow-gaging stations at the measuring sites specified in the Yellowstone River Compact were continued in operation and satisfactory records were collected at each station. Locations of streamflow-gaging stations, along with reservoir stations, are shown on a map of the Yellowstone River Basin at the end of the report.

During water year 2000, annual streamflow was normal¹ in one of the four reporting Yellowstone River tributaries. Streamflow in Bighorn, Tongue, and Powder River basins was below normal.

<u>Station number</u>	<u>Measurement site</u>	<u>Percent of average²</u>
06208500	Clarks Fork Yellowstone River at Edgar, Mont., minus diversions to White Horse Canal	85
06294500	Bighorn River above Tullock Creek, near Bighorn, Mont., minus Little Bighorn River near Hardin, Mont. Adjusted for change in contents in Bighorn Lake	68
06308500	Tongue River at Miles City, Mont.	57
06326500	Powder River near Locate, Mont.	54

¹The "normal" range is 80 to 120 percent of average.

²Average is based on period of record at station.

Tabulation of streamflow data for water year 2000 and graphical comparisons with average flows for the preceding year and for selected base periods are given in the section "Summary of discharge for Compact streamflow-gaging stations."

Diversions

No diversions were regulated by the Commission during the year. The Commissioners considered the need to develop procedures to administer water in accordance with the provisions of the Compact.

Storage in reservoirs

Reservoirs completed after January 1, 1950

Bighorn Lake, a Bureau of Reclamation project on the Bighorn River, and the largest storage project in the basin, contained 1,037,000 acre-feet at the beginning of the year and 867,300 acre-feet at the end of the year. Daily contents ranged from 853,300 acre-feet on September 19, 2000 to 1,037,000 acre-feet on October 3, 1999. Boysen Reservoir, located on the Wind River and operated by the Bureau of Reclamation, began the year with 592,500 acre-feet in storage and ended the year with 502,100 acre-feet. Anchor Reservoir began the year with 248 acre-feet in storage and ended the year with 286 acre-feet. Month-end and year-end contents and a description of these reservoirs are given in the section "Monthly summary of contents for Compact reservoirs completed after January 1, 1950." The Commission is cognizant of other reservoirs in the Yellowstone River basin and considers their aggregate effect to be insufficient to warrant the collection of storage data at this time.

Reservoirs existing on January 1, 1950

As a matter of record and general information, month-end contents are given later in the report for reservoirs in existence upstream from the points of measurement on January 1, 1950. The reservoirs are Bull Lake, Pilot Butte Reservoir, Buffalo Bill Reservoir, and Tongue River Reservoir. These data are pertinent to allocation under Article V, Section C, Item 3 of the Compact.

The capacity of Buffalo Bill Reservoir was increased in 1992 from 456,600 acre-feet to 644,540 acre-feet (listed as 646,565 acre-feet by Bureau of Reclamation). The capacity of Tongue River Reservoir was increased in 1999 from 68,000 acre-feet to 79,100 acre-feet.

SUMMARY OF DISCHARGE FOR COMPACT STREAMFLOW-GAGING STATIONS

06208500 Clarks Fork Yellowstone River at Edgar, Mont.

LOCATION.--Lat 45°27'58", long 108°50'35", in SE¹/₄SE¹/₄SE¹/₄ sec.23, T.4 S., R.23 E., Carbon County, Hydrologic Unit 10070006, on right bank 400 ft downstream from county bridge, 0.5 mi east of Edgar, 6 mi upstream from Rock Creek, and at river mile 22.1.

DRAINAGE AREA.--2,032 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1921 to September 1969, October 1986 to current year.

REVISED RECORDS.--WSP 1509: 1924, 1932(M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,460 ft above sea level, from topographic map. Prior to Aug. 31, 1953, nonrecording gage at same site and datum.

REMARKS.--Water-discharge records good except those for the estimated daily discharges, which are poor. Diversions for irrigation of about 41,500 acres, of which about 840 acres lies downstream from the station. In addition, about 6,300 acres of land upstream from the station are irrigated by diversions from the adjoining Rock Creek basin. U.S.Geological Survey satellite telemeter at station. Figures of discharge given herein have the flow of White Horse Canal subtracted.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	466	449	512	e450	e390	353	346	1040	4310	2260	412	185
2	493	462	516	e440	e380	350	350	1250	3640	2420	411	195
3	528	455	512	e450	e360	345	344	1700	3550	2430	384	199
4	516	442	516	e460	e380	342	339	2070	3980	2290	397	202
5	479	468	492	e460	e400	340	333	2230	4290	2060	473	198
6	465	479	438	e460	405	350	395	2080	4590	1670	601	193
7	464	460	487	e460	407	359	484	1760	4860	1370	596	201
8	467	463	511	e460	409	394	422	1480	5150	1290	480	196
9	466	456	471	e460	418	382	376	1200	4890	1270	378	185
10	481	457	e460	e450	e370	359	385	1070	4370	1310	330	186
11	484	462	e470	e440	e340	362	409	934	3610	1260	300	204
12	461	456	e470	e400	e330	360	405	793	3130	1180	273	197
13	446	454	e440	e440	e330	349	487	651	3250	1080	258	193
14	449	440	e420	e460	e340	339	571	544	3180	1020	239	196
15	445	449	e430	e470	e330	341	742	460	2720	962	226	190
16	472	445	445	e480	e320	337	609	366	3360	936	198	174
17	496	453	501	e460	e320	324	565	975	3160	916	174	171
18	502	462	497	e450	e320	329	582	2280	2620	934	160	179
19	498	450	482	e450	e330	334	608	1550	2420	1010	162	181
20	501	461	492	e440	342	327	584	1800	3120	1060	158	208
21	484	441	506	e430	360	328	558	2080	2900	960	164	267
22	476	450	487	e420	383	310	692	2420	2480	871	164	354
23	462	430	492	e410	375	322	973	3380	2500	758	155	460
24	466	415	435	e400	370	331	1030	3950	2790	676	151	506
25	452	410	476	e410	379	340	839	4540	3100	606	152	495
26	445	491	441	e420	367	340	735	5050	3170	546	147	473
27	433	526	461	e400	346	338	628	4950	2900	517	151	488
28	450	531	458	e380	357	356	559	4620	2590	492	158	449
29	453	525	466	e360	359	382	943	5860	2330	485	170	440
30	439	517	466	e370	---	398	1320	5770	2230	462	172	446
31	444	---	e450	e380	---	368	---	4960	---	445	184	---
TOTAL	14583	13859	14700	13420	10517	10789	17613	73813	101190	35546	8378	8211
MEAN	470	462	474	433	363	348	587	2381	3373	1147	270	274
MAX	528	531	516	480	418	398	1320	5860	5150	2430	601	506
MIN	433	410	420	360	320	310	333	366	2230	445	147	171
AC-FT	28930	27490	29160	26620	20860	21400	34940	146400	200700	70510	16620	16290

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 2000, BY WATER YEAR (WY)*

MEAN	536	502	410	352	351	367	563	2117	4102	2064	630	485
MAX	1010	777	593	512	584	554	1398	5578	7256	4771	1541	1395
(WY)	1942	1928	1996	1997	1963	1943	1943	1928	1996	1943	1951	1941
MIN	298	310	217	200	180	220	123	757	1768	290	49.5	156
(WY)	1956	1936	1937	1922	1922	1924	1961	1968	1987	1988	1988	1988

SUMMARY STATISTICS

FOR 1999 CALENDAR YEAR

FOR 2000 WATER YEAR

WATER YEARS 1921 - 2000*

ANNUAL TOTAL	414856	322619	
ANNUAL MEAN	1137	881	1041
HIGHEST ANNUAL MEAN			1623
LOWEST ANNUAL MEAN			668
HIGHEST DAILY MEAN	7880	5860	10600
LOWEST DAILY MEAN	300	147	37
ANNUAL SEVEN-DAY MINIMUM	322	154	43
INSTANTANEOUS PEAK FLOW		6430	11100
INSTANTANEOUS PEAK STAGE		7.30	9.30
INSTANTANEOUS LOW FLOW			36
ANNUAL RUNOFF (AC-FT)	822900	639900	754300
10 PERCENT EXCEEDS	3280	2440	2870
50 PERCENT EXCEEDS	472	460	471
90 PERCENT EXCEEDS	345	221	275

*--During period of operation (water years 1921-69, 1987 to current year).

e--Estimated.

06208500 CLARKS FORK YELLOWSTONE RIVER AT EDGAR, MONT.
(Minus diversions to White Horse Canal)

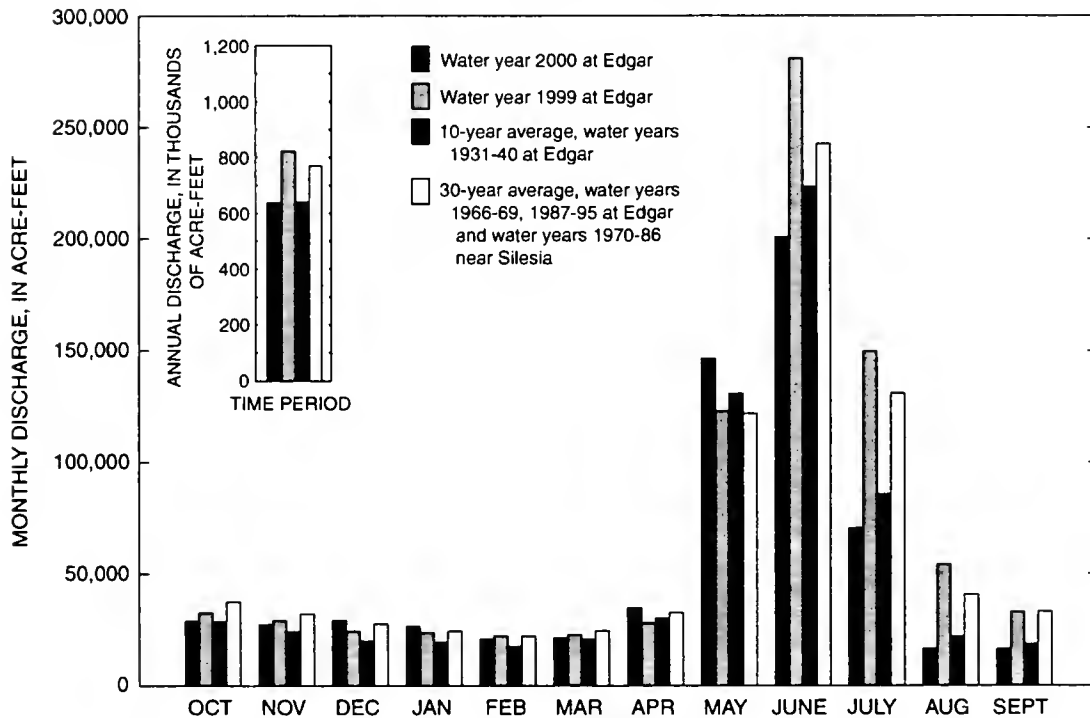


Figure 1. Comparison of discharge of the Clarks Fork Yellowstone River during water year 2000 with discharge during water year 1999 and with 10-year and 30-year average discharges.

06294000 Little Bighorn River near Hardin, Mont.

LOCATION.--Lat 45°44'09", long 107°33'24", in SE¹/₄NE¹/₄NE¹/₄ sec.19, T.1 S., R.34 E., Big Horn County, Hydrologic Unit 10080016, on left bank 50 ft downstream from bridge on Sarpy Road, 0.2 mi upstream of terminal wasteway of Agency Canal, 0.6 mi upstream from mouth, and 2.3 mi east of Hardin.

DRAINAGE AREA.--1,294 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1953 to current year.

REVISED RECORDS.--WDR MT-86-1: 1978.

GAGE.--Water-stage recorder. Datum of gage is 2,882.29 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to Oct. 7, 1953, nonrecording gage at site 0.4 mi downstream. Oct. 7, 1953 to May 6, 1963, water-stage recorder at site 0.3 mi downstream. May 6, 1963 to Nov. 6, 1963, nonrecording gage at site 0.4 mi downstream. All at different datums. Nov. 7, 1963 to Aug. 15, 1976, water-stage recorder at site 35 ft downstream at present datum. Aug. 15, 1976 to Sept. 30, 1979, water-stage recorders were located on each bank downstream of Sarpy Road bridge and were used depending on control conditions.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Flow partly regulated by Willow Creek Reservoir (capacity 23,000 acre-ft). Diversions for irrigation of 20,980 acres upstream from station. Figures of discharge given herein include flow of terminal wasteway of Agency Canal. U. S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	146	147	154	e120	e100	232	163	200	1040	384	85	64
2	154	147	152	e110	e120	244	162	202	1000	365	78	84
3	152	147	150	e100	e110	239	161	200	892	360	71	93
4	163	144	145	e90	e120	241	174	209	813	362	62	61
5	168	154	145	e120	e150	257	172	226	790	350	49	40
6	169	167	140	e110	e150	278	171	261	751	276	48	34
7	165	163	e130	e120	e200	272	177	301	721	287	57	40
8	149	157	e120	e110	e200	258	176	331	680	284	62	52
9	143	152	e100	e110	e180	239	158	356	660	265	67	81
10	142	154	e120	e120	e180	215	148	330	675	251	60	76
11	139	154	e130	e130	e180	195	143	293	703	231	45	65
12	140	148	e130	e120	e190	190	134	269	638	202	38	50
13	139	150	e120	e100	e180	193	130	259	576	177	36	46
14	148	150	e100	e110	e180	182	131	253	535	158	28	46
15	171	147	e140	e120	e190	178	134	246	519	134	23	43
16	187	144	e130	e140	e180	176	142	230	495	134	20	37
17	194	143	e130	e130	e170	166	139	242	525	114	16	35
18	175	154	e130	e120	e160	169	136	475	501	94	16	26
19	181	161	e120	e120	e160	162	135	1530	448	112	15	8.7
20	193	176	e110	e130	e180	162	148	1550	421	171	19	18
21	198	168	e120	e140	e190	159	188	1080	455	197	29	42
22	185	160	e150	e130	195	160	174	912	485	185	35	95
23	180	154	e130	e110	188	152	169	844	464	146	33	124
24	182	137	e120	e110	202	149	175	900	449	138	35	136
25	172	140	e110	e120	202	148	179	983	440	127	38	135
26	158	153	e110	e130	218	164	182	995	439	102	44	109
27	159	161	e120	e130	233	166	186	1050	451	94	49	104
28	155	161	e110	e120	211	169	185	1050	423	121	39	102
29	151	160	e110	e110	204	162	176	1030	411	107	32	99
30	150	155	e120	e100	---	163	176	1120	392	110	37	93
31	149	---	e130	e95	---	165	---	1120	---	108	63	---
TOTAL	5057	4608	3926	3625	5123	6005	4824	19047	17792	6146	1329	2038.7
MEAN	163	154	127	117	177	194	161	614	593	198	42.9	68.0
MAX	198	176	154	140	233	278	188	1550	1040	384	85	136
MIN	139	137	100	90	100	148	130	200	392	94	15	8.7
AC-FT	10030	9140	7790	7190	10160	11910	9570	37780	35290	12190	2640	4040

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 2000, BY WATER YEAR (WY)

	MEAN	158	156	138	144	207	321	322	632	855	277	123	132
MAX	276	248	223	366	610	987	748	2852	1981	1333	382	267	
(WY)	1979	1979	1979	1975	1971	1972	1965	1978	1968	1975	1975	1978	
MIN	67.6	84.6	68.7	71.6	70.3	92.7	54.8	71.9	117	8.50	2.46	19.1	
(WY)	1957	1986	1962	1988	1989	1961	1961	1961	1961	1961	1961	1960	

SUMMARY STATISTICS FOR 1999 CALENDAR YEAR FOR 2000 WATER YEAR WATER YEARS 1954 - 2000

ANNUAL TOTAL	104340	79520.7	
ANNUAL MEAN	286	217	
HIGHEST ANNUAL MEAN			289
LOWEST ANNUAL MEAN			676
HIGHEST DAILY MEAN	1740	Jun 8	1550
LOWEST DAILY MEAN	82	Jul 23	8.7
ANNUAL SEVEN-DAY MINIMUM	96	Aug 26	20
INSTANTANEOUS PEAK FLOW			1980
INSTANTANEOUS PEAK STAGE			5.19
INSTANTANEOUS LOW FLOW			
ANNUAL RUNOFF (AC-FT)	207000	157700	209100
10 PERCENT EXCEEDS	661	450	631
50 PERCENT EXCEEDS	160	154	168
90 PERCENT EXCEEDS	110	56	80

a--Gage height, 11.20 ft.

b--Site and datum then in use, backwater from ice.

c--Result of discharge measurement.

e--Estimated.

06294500 Bighorn River above Tullock Creek, near Bighorn, Mont.

LOCATION.--Lat 46°07'29", long 107°28'06", in SE¹/₄SE¹/₄NE¹/₄ sec.3, T.4 N., R.34 E., Treasure County, Hydrologic Unit 10080015, on right bank 1.9 mi upstream from Tullock Creek, 3.6 mi southwest of Bighorn, 4.5 mi southeast of Custer, and at river mile 3.0.

DRAINAGE AREA.--22,414 mi². Area at site used Oct. 7, 1955, to Sept. 30, 1981, 22,885 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1981 to current year. Previously published as "06294700 Bighorn River at Bighorn, MT" 1956-81, and as "near Custer" 1945-55. Flows are equivalent at all sites.

GAGE.--Water-stage recorder. Elevation of gage is 2,700 ft above sea level, from topographic map. May 11, 1945 to Dec. 6, 1945, nonrecording gage, and Dec. 7, 1945 to Oct. 6, 1955, water-stage recorder 1.7 mi upstream at different datum. Oct. 7, 1955 to Sept. 30, 1981, at site 2.3 mi downstream at different datum.

REMARKS.--Water-discharge records good. Flow regulated by Bighorn Lake beginning November 1965 (usable capacity, 1,312,000 acre-ft). Major regulation prior to November 1965 by 14 reservoirs in Wyoming and 1 in Montana with combined usable capacity of about 1,400,000 acre-ft. Diversion for irrigation of about 445,200 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3870	3730	3330	2950	2780	2790	2770	2940	3500	2620	2560	2350
2	3990	3750	3240	2950	2790	2750	2780	2970	3420	2730	2560	2390
3	4000	3800	3050	2940	2830	2710	2770	2950	3350	2740	2730	2410
4	3990	3580	3060	2900	2820	2720	2770	2950	3250	2730	2800	2390
5	4010	3280	3040	2920	2830	2730	2780	2900	3200	2710	2750	2360
6	4040	3310	3060	2950	2850	2780	2760	2980	3160	2650	2750	2320
7	4080	3310	3070	2930	2840	2770	2790	3140	3090	2600	2740	2280
8	4080	3350	3030	2850	2860	2790	2770	3280	3060	2440	2690	2240
9	4140	3350	3020	2860	2900	2730	2750	3250	3050	2450	2640	2250
10	4190	3390	3050	2870	2930	2710	2740	3170	3290	2470	2500	2270
11	4230	3450	3100	2850	2760	2820	2730	3100	3360	2450	2620	2230
12	4250	3460	3150	2900	2740	3050	2740	3050	3270	2400	2760	2180
13	4300	3470	3170	2840	2720	3060	2750	3020	3160	e2400	2770	2100
14	4420	3510	3120	2830	2670	3040	2770	2960	3080	e2400	2740	2050
15	4210	3520	3140	2860	2660	2990	2740	2910	3130	e2400	2620	2040
16	3930	3540	3200	2870	2640	2980	2730	2720	3070	e2400	2440	2020
17	3930	3470	3210	2890	2630	2970	2740	2850	3080	e2400	2470	1990
18	3970	3450	3200	2900	2640	2960	2730	3370	3100	2480	2490	1960
19	4010	3340	3190	2900	2620	2970	2660	4370	3070	2510	2480	1960
20	4000	3200	3170	2870	2610	2960	2720	4690	3060	2510	2490	1960
21	4050	3200	3200	2850	2630	2950	2720	3940	2990	2560	2490	1990
22	4110	3200	3200	2880	2620	2920	2760	3570	2880	2600	2440	2250
23	4090	3210	3240	2890	2650	2940	2750	3270	2880	2580	2390	2240
24	4150	3230	3240	2880	2670	2950	2800	3190	2830	2540	2400	2200
25	4170	3290	3210	2840	2820	2940	2800	3220	2790	2510	2370	2190
26	4190	3360	3200	2820	2720	2950	2800	3230	2790	2530	2350	2150
27	4220	3310	3230	2860	2670	2950	2800	3360	2680	2530	2330	2130
28	3960	3310	3260	2860	2680	2950	2810	3380	2440	2550	2320	2090
29	3660	3330	3140	2850	2710	3020	2920	3390	2530	2580	2300	2060
30	3700	3330	2920	2840	---	2930	2970	3460	2590	2590	2310	2070
31	3690	---	2940	2810	---	2790	---	3540	---	2590	2330	---
TOTAL	125630	102030	97380	89210	79290	89570	83120	101120	91150	78650	78630	65120
MEAN	4053	3401	3141	2878	2734	2889	2771	3262	3038	2537	2536	2171
MAX	4420	3800	3330	2950	2930	3060	2970	4690	3500	2740	2800	2410
MIN	3660	3200	2920	2810	2610	2710	2660	2720	2440	2400	2300	1960
AC-FT	249200	202400	193200	176900	157300	177700	164900	200600	180800	156000	156000	129200

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2000, BY WATER YEAR (WY)

MEAN	3309	3371	3203	3081	3251	3776	3625	4503	7176	5489	2908	2904
MAX	5546	5599	4907	5478	5314	6580	7881	9102	15180	19090	6972	4952
(WY)	1972	1974	1968	1968	1971	1972	1997	1947	1948	1967	1997	1973
MIN	1391	1223	1280	1382	1843	908	1063	1304	1050	707	868	1009
(WY)	1990	1978	1961	1961	1966	1966	1966	1966	1966	1960	1961	1966

SUMMARY STATISTICS FOR 1999 CALENDAR YEAR FOR 2000 WATER YEAR WATER YEARS 1945 - 2000

ANNUAL TOTAL	1940800	1080900	
ANNUAL MEAN	5317	2953	3866
HIGHEST ANNUAL MEAN			5594
LOWEST ANNUAL MEAN			1623
HIGHEST DAILY MEAN	12200	Jun 8	50000
LOWEST DAILY MEAN	2710	Sep 24	400
ANNUAL SEVEN-DAY MINIMUM	3050	Dec 3	528
INSTANTANEOUS PEAK FLOW			a59200
INSTANTANEOUS PEAK STAGE			14.15
INSTANTANEOUS LOW FLOW			b275
ANNUAL RUNOFF (AC-FT)	3850000	2144000	2800000
10 PERCENT EXCEEDS	9360	3670	6500
50 PERCENT EXCEEDS	4210	2870	3270
90 PERCENT EXCEEDS	3240	2390	1860

06294500 Bighorn River above Tullock Creek, near Bighorn, Mont.--Continued

	WATER YEARS 1946-1961*		WATER YEARS 1967 - 2000**	
ANNUAL MEAN	3358		3989	
HIGHEST ANNUAL MEAN	5501	1947	5594	1997
LOWEST ANNUAL MEAN	1623	1961	1999	1989
HIGHEST DAILY MEAN	25700	Jun 23 1947	50000	May 20 1978
LOWEST DAILY MEAN	462	May 12 1961	400	Apr 4 1967
ANNUAL SEVEN-DAY MINIMUM	528	May 6 1961	843	Nov 18 1977
INSTANTANEOUS PEAK FLOW	c26200	Jun 24 1947	59200	May 20 1978
INSTANTANEOUS PEAK STAGE	d10.65	Mar 20 1947	14.15	May 20 1978
INSTANTANEOUS LOW FLOW	b275	Nov 15 1959		
ANNUAL RUNOFF (AC-FT)	2578000		2890000	
10 PERCENT EXCEEDS	6200		6390	
50 PERCENT EXCEEDS	2810		3510	
90 PERCENT EXCEEDS	1500		2050	

*--Prior to construction of Yellowtail Dam.

**--After completion of Yellowtail Dam.

a--Gage height, 14.50 ft, at different site and datum.

b--About, result of freezeup.

c--Gage height, 8.79 ft, at different site and datum.

d--Backwater from ice.

e--Estimated.

06294500 BIGHORN RIVER ABOVE TULLOCK CREEK, NEAR BIGHORN, MONT.
 (Adjusted for change in contents in Bighorn Lake
 minus
 Little Bighorn River near Hardin, Mont.)

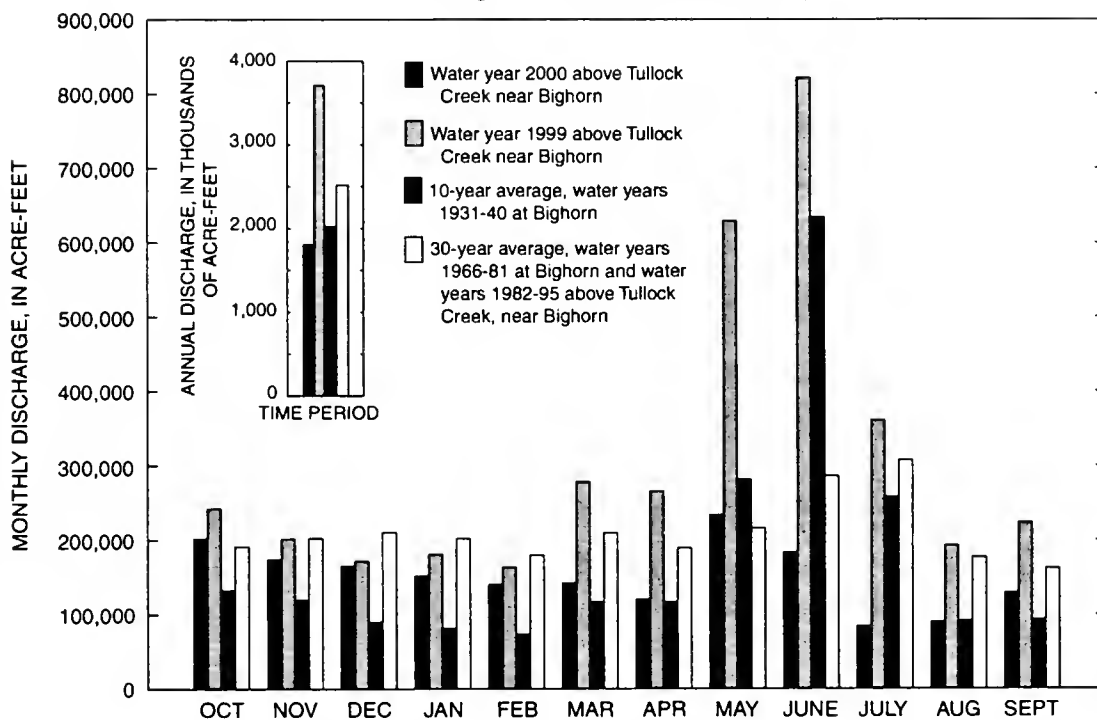


Figure 2. Comparison of discharge of the Bighorn River during water year 2000 with discharge during water year 1999 and with 10-year and 30-year average discharges.

06308500 Tongue River at Miles City, Mont.

LOCATION.--Lat 46°23'05", long 105°50'41", in SE¹/₄SE¹/₄SE¹/₄ sec. 4, T.7 N., R.47 E., Custer County, Hydrologic Unit 10090102, on right bank 1.5 mi south of Miles City and at river mile 2.3.

DRAINAGE AREA.--5,397 mi². Area at site used prior to Oct. 4, 1995, 5,379 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1938 to April 1942, April 1946 to current year. Published as "near Miles City" April 1938 to April 1942. Not equivalent to records published as "near Miles City" May 1929 to October 1932. April 1946 to Oct. 4, 1995, at site 2.5 mi upstream. Flows at present site are equivalent with site operated from 1946. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 2,360 ft above sea level, from topographic map. April 1938 to April 1942, nonrecording gage at site 8 mi upstream at different datum. April 1946 to Sept. 30, 1963, at datum 1.00 ft higher. Oct. 4, 1995, gage was moved 2.5 miles downstream.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Flow regulation by Tongue River Reservoir (station 06307000) (capacity of 79,100 acre-feet), and many small reservoirs in Wyoming (combined capacity about 15,000 acre-ft). Diversions for irrigation of about 100,800 acres upstream from station. U. S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	217	236	259	e140	e190	e250	311	150	1330	376	96	52
2	198	233	259	e120	e180	e250	317	64	1420	348	97	65
3	214	236	259	e130	e180	e280	317	53	1450	295	112	75
4	223	238	e250	e150	e180	e300	292	46	1460	306	112	78
5	215	241	e250	e150	e180	e360	255	44	1410	338	134	80
6	207	243	e240	e160	e180	e340	228	41	1290	256	120	96
7	201	243	e220	e160	e190	e320	216	28	775	196	142	106
8	199	239	e200	e160	e180	e290	213	26	796	155	108	129
9	199	237	e170	e160	e130	e290	212	24	888	127	124	116
10	218	234	e140	e160	e110	e270	207	26	1040	131	83	114
11	257	236	e150	e160	e120	322	204	24	959	151	82	115
12	243	237	e140	e170	e120	267	201	23	910	160	72	124
13	274	237	e140	e170	e120	254	203	25	894	104	67	146
14	343	240	e150	e170	e120	260	204	25	796	80	76	130
15	283	239	e160	e170	e120	257	201	24	789	63	60	122
16	256	239	e170	e180	e120	250	200	27	758	55	68	107
17	250	240	e170	e170	e120	246	198	26	737	54	66	110
18	250	241	e130	e160	e140	243	197	23	661	56	60	113
19	245	243	e130	e160	e170	238	195	24	602	68	59	117
20	245	240	e140	e170	e190	237	194	54	671	83	60	112
21	245	237	e140	e160	e200	251	193	53	669	83	57	117
22	242	235	e150	e160	e210	265	191	46	598	90	55	127
23	243	236	e150	e170	e220	266	193	163	551	90	49	147
24	246	e230	e160	e170	e200	272	199	356	502	99	47	157
25	244	e250	e170	e180	e170	267	193	376	473	123	49	169
26	237	256	e170	e170	e190	263	184	517	466	102	50	136
27	237	276	e180	e170	e200	283	180	658	444	89	47	144
28	235	280	e170	e170	e220	304	175	813	427	88	46	145
29	238	269	e160	e170	e230	332	169	921	411	74	55	151
30	237	262	e160	e170	---	323	189	1010	396	73	48	163
31	237	---	e160	e180	---	318	---	1240	---	85	45	---
TOTAL	7378	7303	5497	5040	4880	8668	6431	6930	24573	4398	2346	3563
MEAN	238	243	177	163	168	280	214	224	819	142	75.7	119
MAX	343	280	259	180	230	360	317	1240	1460	376	142	169
MIN	198	230	130	120	110	237	169	23	396	54	45	52
AC-FT	14630	14490	10900	10000	9680	17190	12760	13750	48740	8720	4650	7070

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2000, BY WATER YEAR (WY)*

	MEAN	250	260	194	199	287	546	451	713	1305	480	188	206
MAX	694	585	423	529	1794	1783	1693	2983	3825	2207	700	599	
(WY)	1972	1942	1950	1999	1971	1971	1965	1978	1978	1975	1975	1968	
MIN	10.3	60.9	68.0	78.6	102	79.8	12.5	29.2	48.6	12.6	6.08	2.40	
(WY)	1961	1989	1990	1961	1961	1961	1961	1961	1960	1960	1949	1938	

SUMMARY STATISTICS FOR 1999 CALENDAR YEAR FOR 2000 WATER YEAR WATER YEARS 1938 - 2000*

ANNUAL TOTAL	171850	87007		
ANNUAL MEAN	471	238		
HIGHEST ANNUAL MEAN			420	
LOWEST ANNUAL MEAN			986	1978
HIGHEST DAILY MEAN	3070	Jun 14	1460	Jun 4
LOWEST DAILY MEAN	110	Jan 2	23	May 12
ANNUAL SEVEN-DAY MINIMUM	118	Sep 17	24	May 9
INSTANTANEOUS PEAK FLOW			1470	Jun 4
INSTANTANEOUS PEAK STAGE			5.07	Jun 4
INSTANTANEOUS LOW FLOW			23	May 12
ANNUAL RUNOFF (AC-FT)	340900	172600		304300
10 PERCENT EXCEEDS	1130	382		966
50 PERCENT EXCEEDS	253	182		230
90 PERCENT EXCEEDS	150	60		73

*--During period of operation (April 1938 to April 1942, April 1946 to current year).

a--At previous site and datum.

e--Estimated.

06308500 TONGUE RIVER AT MILES CITY, MONT.

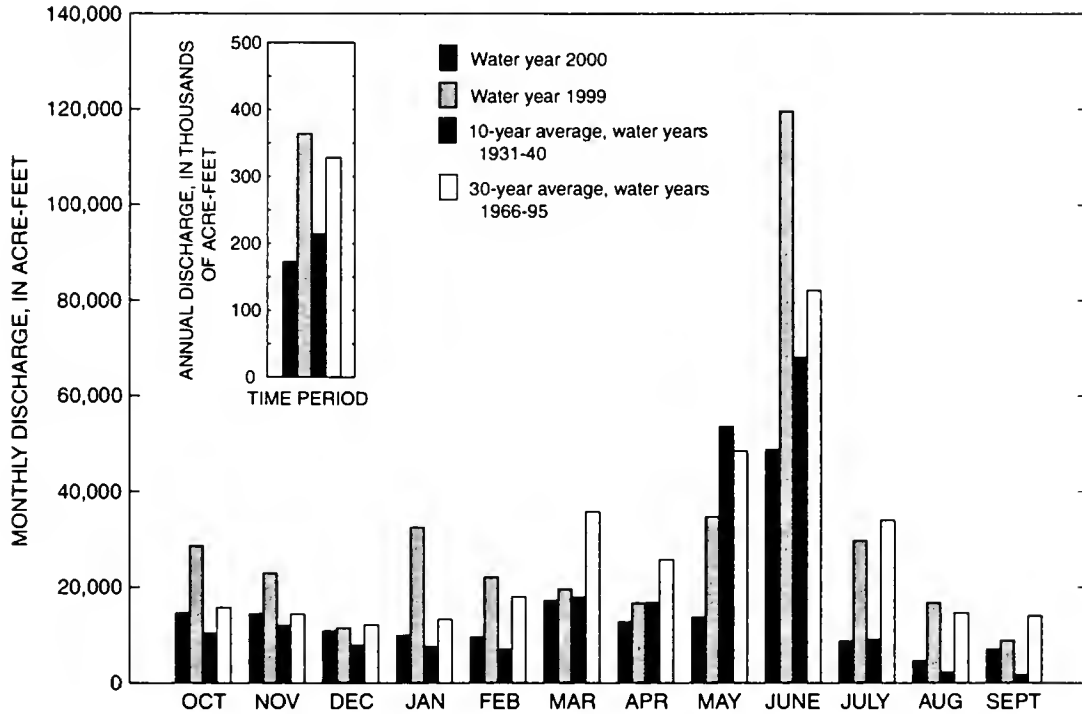


Figure 3. Comparison of discharge of the Tongue River during water year 2000 with discharge during water year 1999 and with 10-year and 30-year average discharges.

06326500 Powder River near Locate, Mont.

LOCATION.--Lat 46°25'48", long 105°18'34", in SW¹/₄SW¹/₄SE¹/₄ sec. 23, T.8 N., R.51 E., Custer County, Hydrologic Unit 10090209, on left bank at downstream side of bridge on U.S. Highway 12, 0.1 mi west of Locate, and 25 mi east of Miles City, and at river mile 29.4.

DRAINAGE AREA.--13,189 mi².

PERIOD OF RECORD.--March 1938 to current year.

WATER-DISCHARGE RECORDS

REVISED RECORDS.--WSP 926: 1939. WSP 1309: 1938-39 (M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,384.79 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to July 11, 1947, nonrecording gage at bridge 1.5 mi upstream, and July 11, 1947 to Sept. 30, 1965, water-stage recorder at site near upstream bridge at different datum. Oct. 1, 1965 to Oct. 4, 1966, nonrecording gage, and Oct. 5, 1966 to Mar. 21, 1978, water-stage recorder at present site and datum. Mar. 22, 1978 to Apr. 23, 1981, water-stage recorder 1.5 mi upstream at different datum, Apr. 24 to Aug. 20, 1981, water-stage recorder at present site and datum, and Aug. 21, 1981 to Sept. 30, 1981, water-stage recorder 1.5 mi upstream at different datum. Oct. 1, 1981 to Apr. 5, 1995 water-stage recorder at site 1.5 miles downstream at different datum. Apr. 7, 1995 to present, water-stage recorders located on each bank and used depending on control conditions.

REMARKS.--Water-discharge records fair except those for estimated daily discharges, which are poor. Some regulation by three reservoirs in Wyoming with combined usable capacity of 36,800 acre-ft. Diversions for irrigation of about 101,800 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	317	315	377	e250	e240	e460	415	529	817	295	16	5.6
2	343	303	393	e150	e230	e480	429	517	977	287	20	5.4
3	380	314	420	e200	e230	e500	416	449	1030	256	21	8.2
4	401	323	385	e230	e230	e600	420	471	1010	249	21	8.9
5	396	312	380	e250	e230	e700	427	475	981	223	18	9.2
6	326	322	348	e270	e230	733	396	508	865	219	16	9.4
7	287	328	346	e270	e230	878	382	591	731	212	18	9.9
8	295	332	336	e270	e200	875	371	463	649	165	15	9.8
9	307	336	325	e260	e150	712	364	410	632	149	12	11
10	304	349	288	e250	e100	594	348	389	589	926	11	12
11	303	352	250	e250	e110	570	361	601	568	714	8.6	14
12	304	359	227	e250	e120	547	359	497	550	266	7.9	20
13	305	359	213	e250	e130	525	357	454	527	124	5.9	23
14	301	361	e200	e250	e130	542	353	435	495	86	5.0	25
15	300	362	179	e250	e150	514	334	454	481	74	7.6	25
16	292	361	133	e240	e120	503	349	386	424	66	6.6	25
17	276	361	e120	e230	e150	499	358	464	359	60	6.2	24
18	291	371	e110	e210	e200	472	332	488	349	55	6.8	28
19	293	376	e120	e200	e400	448	322	418	307	44	7.6	33
20	286	380	e130	e220	e500	459	316	377	282	41	7.8	40
21	291	388	e150	e230	e500	431	342	1210	286	77	7.1	45
22	295	390	e170	e230	e500	441	330	2080	307	111	6.6	59
23	300	382	e190	e240	e500	444	342	1570	260	56	6.5	63
24	310	353	e190	e240	e500	421	475	1360	240	44	6.2	66
25	309	348	e230	e240	e400	411	490	1210	218	40	5.3	64
26	309	363	e250	e250	e420	423	568	1130	205	32	5.0	71
27	314	361	e300	e250	e440	405	554	1180	215	25	4.7	86
28	315	340	e320	e250	e460	415	531	1190	218	21	4.5	92
29	326	353	e320	e250	e460	427	497	1030	221	18	4.4	95
30	315	366	e320	e250	---	425	460	939	272	15	4.6	98
31	319	---	e300	e250	---	413	---	887	---	14	4.6	---
TOTAL	9710	10520	8020	7430	8260	16267	11998	23162	15065	4964	297.5	1085.4
MEAN	313	351	259	240	285	525	400	747	502	160	9.60	36.2
MAX	401	390	420	270	500	878	568	2080	1030	926	21	98
MIN	276	303	110	150	100	405	316	377	205	14	4.4	5.4
AC-FT	19260	20870	15910	14740	16380	32270	23800	45940	29880	9850	590	2150

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 2000, BY WATER YEAR (WY)

	MEAN	258	224	153	145	444	1268	756	1187	1664	581	221	172
MAX	921	790	417	476	3850	4627	3062	5970	8045	2015	1096	898	
(WY)	1941	1999	1942	1981	1943	1972	1965	1978	1944	1993	1941	1941	
MIN	1.77	12.5	12.5	4.53	2.82	80.2	109	142	123	14.4	1.30	.19	
(WY)	1961	1961	1961	1950	1950	1950	1961	1961	1966	1988	1988	1960	

SUMMARY STATISTICS

FOR 1999 CALENDAR YEAR

FOR 2000 WATER YEAR

WATER YEARS 1939 - 2000

ANNUAL TOTAL	274608	116778.9	589
ANNUAL MEAN	752	319	1622
HIGHEST ANNUAL MEAN			79.4
LOWEST ANNUAL MEAN			1944
HIGHEST DAILY MEAN	4800	May 5	2080
LOWEST DAILY MEAN	59	Sep 1	4.4
ANNUAL SEVEN-DAY MINIMUM	65	Aug 28	4.7
INSTANTANEOUS PEAK FLOW			3200
INSTANTANEOUS PEAK STAGE			4.56
INSTANTANEOUS LOW FLOW			3.6
ANNUAL RUNOFF (AC-FT)	544700	231600	426900
10 PERCENT EXCEEDS	2120	551	1380
50 PERCENT EXCEEDS	340	304	246
90 PERCENT EXCEEDS	132	15	43

a--Backwater from ice.

b--On many days in 1950, 1960-61, and 1988.

e--Estimated.

06326500 POWDER RIVER NEAR LOCATE, MONT.

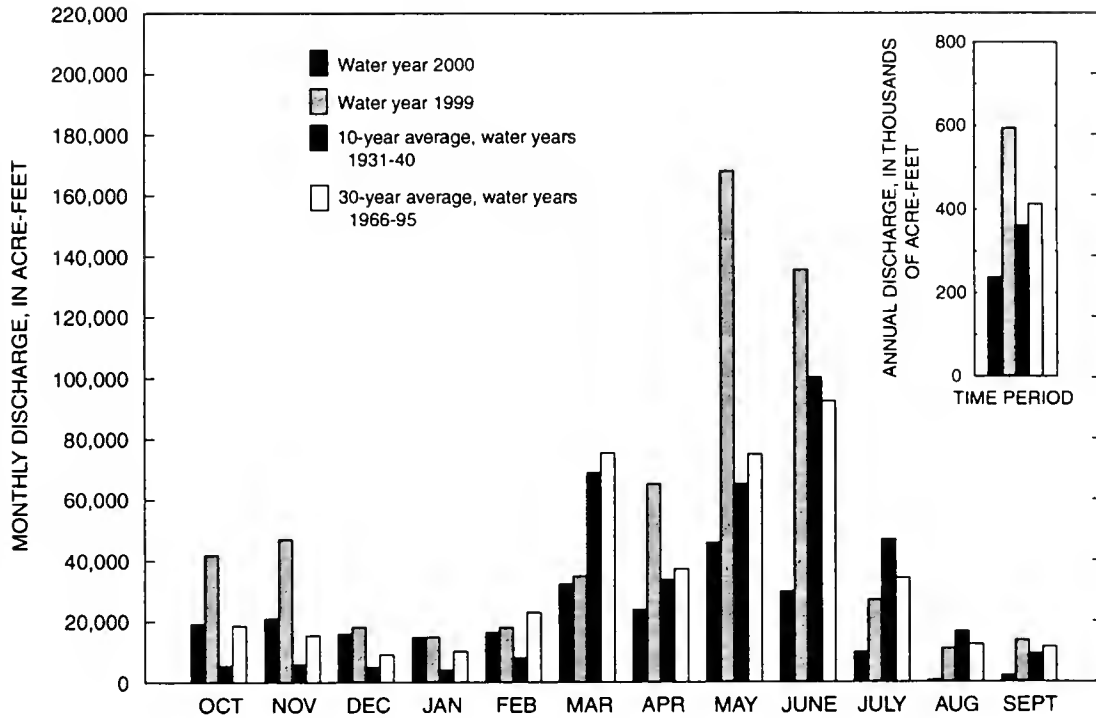


Figure 4. Comparison of discharge of the Powder River during water year 2000 with discharge during water year 1999 and with 10-year and 30-year average discharges.

**MONTHLY SUMMARY OF CONTENTS FOR COMPACT RESERVOIRS
COMPLETED AFTER JANUARY 1, 1950**

06258900 Boysen Reservoir, Wyo.

LOCATION.--Lat 43°25'00", long 108°10'37", in NW¹/₄NW¹/₄ sec. 16, T.5 N., R.6 E., Fremont County, Hydrologic Unit 10080005, at dam on Wind River and 13 mi north of Shoshoni, Wyoming.

DRAINAGE AREA.--7,700 mi².

PERIOD OF RECORD.--October 1951 to current year (month-end contents only).

GAGE.--Water-stage recorder. Datum of gage is feet above sea level (levels by Bureau of Reclamation).

REMARKS.--Reservoir is formed by rock-fill dam completed in October 1951. Storage began Oct. 11, 1951. Usable capacity, 701,500 acre-ft between elevation 4,657.00 ft, invert of penstock pipe, and 4,725.00 ft, top of spillway gate. Dead storage, 40,080 acre-ft below elevation 4,657.00 ft. Prior to Jan. 1, 1966, usable capacity was 757,800 acre-ft and dead storage was 62,000 acre-ft at same elevations. Between January 1966 and October 1996, usable capacity was 742,100 acre-ft and dead storage was 59,880 acre-ft, at same elevations. Crest of dam is at elevation 4,758.00 ft. Water used for irrigation, flood control, and power generation.

COOPERATION.--Elevations and capacity table furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 862,500 acre-ft, July 6, 7, 1967, elevation, 4,730.83 ft; minimum daily contents since normal use of water started, 191,900 acre-ft, Mar. 18, 19, 1956, elevation, 4,684.18 ft, capacity table then in use.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 600,900 acre-ft, October 28, elevation, 4,719.58 ft; minimum daily contents, 501,300 acre-ft, September 23, 24, elevation, 4,713.39 ft.

Month	Water-surface elevation, in feet	Usable contents, in acre-feet	Change in usable contents, in acre-feet
September 30, 1999	4,719.10	592,500	---
October 31	4,719.44	598,400	+5,900
November 30	4,718.97	590,300	-8,100
December 31	4,717.58	566,800	-23,500
January 31, 2000	4,716.62	551,100	-15,700
February 29	4,716.37	547,100	-4,000
March 31	4,716.14	543,400	-3,700
April 30	4,714.71	521,200	-22,200
May 31	4,717.33	562,700	+41,500
June 30	4,719.22	594,600	+31,900
July 31	4,717.05	558,100	-36,500
August 31	4,714.50	518,000	-40,100
September 30, 2000	4,713.45	502,100	-15,900
2000 water year			-90,400

06260300 Anchor Reservoir, Wyo.

LOCATION.--Lat 43°39'50", long 108°49'27", in sec. 26, T.43 N., R.100 W., Hot Springs County, Hydrologic Unit 10080007, at dam on South Fork Owl Creek, 2 mi downstream from Middle Fork, 3 mi southeast of Anchor, and 32 mi west of Thermopolis.

DRAINAGE AREA.--131 mi².

PERIOD OF RECORD.--November 1960 to current year (month-end contents only).

GAGE.--Water-stage recorder. Datum of gage is feet above sea level (Bureau of Reclamation benchmark).

REMARKS.--Reservoir is formed by concrete arch dam completed in 1960. Usable capacity, 17,160 acre-ft between elevation 6,343.75 ft, invert of river outlet, and 6,441.00 ft, spillway crest, including 68 acre-ft below elevation 6,343.75 ft. Prior to Oct. 1, 1971, usable capacity was 17,280 acre-ft, including 149 acre-ft below the invert. Water is used for irrigation of land in Owl Creek basin.

COOPERATION.--Records furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 9,250 acre-ft, July 4, 1967, elevation, 6,418.52 ft; no usable storage on many days some years.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 1,060 acre-ft, May 6, elevation, 6,371.90 ft; no storage July 27 to August 31.

Month	Water-surface elevation, in feet	Usable contents, in acre-feet	Change in usable contents, in acre-feet
September 30, 1999	6,354.70	248	---
October 31	6,354.20	238	-10
November 30	6,352.00	191	-47
December 31	6,352.00	191	0
January 31, 2000	6,352.00	191	0
February 29	6,357.00	314	+123
March 31	6,347.40	112	-202
April 30	6,364.70	613	+501
May 31	6,366.00	679	+66
June 30	6,359.00	379	-300
July 31	6,355.40	0	-379
August 31	6,355.20	0	0
September 30, 2000	6,356.10	286	+286
2000 water year			+38

06286400 Bighorn Lake near St. Xavier, Mont.

LOCATION.--Lat 45°18'27", long 107°57'26", in SW¹/₄SE¹/₄ sec.18, T.6 S., R.30 E., Big Horn County, Hydrologic Unit 10080010, in block 13 of Yellowtail Dam on Bighorn River, 1.3 mi upstream from Grapevine Creek, 15.5 mi southwest of St. Xavier, and at river mile 86.6.

DRAINAGE AREA.--19,626 mi².

PERIOD OF RECORD.--November 1965 to current year (month-end contents only). Prior to October 1969, published as "Yellowtail Reservoir." Records of daily elevations and contents on file at the USGS office in Helena, Mont.

GAGE.--Water-stage recorder in powerhouse control room. Datum of gage is referenced to sea level (levels by Bureau of Reclamation).

REMARKS.--Reservoir is formed by thin concrete-arch dam; construction began in 1961; completed in 1967. Storage began Nov. 3, 1965. Usable capacity, 1,312,000 acre-ft, between elevation 3,296.50 ft, river outlet invert, and 3,657.00 ft, top of flood control. Elevation of spillway crest, 3,593.00 ft. Normal maximum operating level, 1,097,000 acre-ft, elevation, 3,640.00 ft. Minimum operating level, 483,400 acre-ft, elevation, 3,547.00 ft. Dead storage, 16,010 acre-ft, below elevation 3,296.50 ft. Water is used for power production, flood control, irrigation, and recreation.

COOPERATION.--Elevations and capacity table furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,346,000 acre-ft, July 6, 1967, elevation, 3,656.43 ft; minimum since first filling, 641,900 acre-ft, Apr. 14, 1989, elevation 3,583.30 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,037,000 acre-ft, October 3, elevation, 3,638.65 ft; minimum, 853,300 acre-ft, September 19, elevation, 3,619.44 ft.

Month	Water-surface elevation, in feet	Usable contents, in acre-feet	Change in usable contents, in acre-feet
September 30, 1999	3,638.64	1,037,000	--
October 31	3,635.43	999,800	-37,200
November 30	3,633.67	980,700	-19,100
December 31	3,631.70	960,300	-20,400
January 31, 2000	3,629.87	942,300	-18,000
February 29	3,629.17	935,600	-6,700
March 31	3,626.59	912,000	-23,600
April 30	3,622.49	877,300	-34,700
May 31	3,630.51	948,500	+71,200
June 30	3,634.20	986,300	+37,800
July 31	3,628.22	926,700	-59,600
August 31	3,620.75	863,400	-63,300
September 30, 2000	3,621.25	867,300	+3,900
2000 water year			-169,700

MONTHLY SUMMARY OF CONTENTS FOR COMPACT RESERVOIRS EXISTING ON JANUARY 1, 1950

The extent, if any, of the use of reservoirs in this section which may be subject to Compact allocations was not determined. As a matter of hydrologic interest the month-end usable contents in acre-feet of four reservoirs are given. The first three reservoirs are in the Bighorn River basin, Wyoming, and data on contents were furnished by the Bureau of Reclamation. The Tongue River Reservoir in Montana is operated under the supervision of the Water Resources Division of the Montana Department of Natural Resources and Conservation, which furnished the water-level data.

Month	Usable contents, in acre-feet			
	06224500 Bull Lake	Pilot Butte Reservoir	06281500 Buffalo Bill Reservoir	06307000 Tongue River Reservoir
September 30, 1999.....	108,400	20,140	510,600	38,180
October 31	97,280	25,360	473,300	37,720
November 30	96,250	24,960	465,800	36,830
December 31	95,700	25,060	457,500	35,270
January 31, 2000	95,030	24,540	449,000	35,940
February 29	95,220	24,450	441,800	35,940
March 31	95,400	24,570	436,200	36,160
April 30	93,510	27,060	430,800	40,380
May 31	112,900	26,550	504,000	78,740
June 30	150,100	29,380	618,100	78,740
July 31	132,400	15,320	571,800	66,730
August 31	89,990	14,680	477,700	48,710
September 30, 2000.....	58,660	7,690	400,400	39,710
Change in contents during water year.....	-49,740	-12,450	-110,200	+1,530

RULES AND REGULATIONS FOR ADMINISTRATION OF THE YELLOWSTONE RIVER COMPACT

A compact, known as the Yellowstone River Compact, between the States of Wyoming, Montana, and North Dakota, having become effective on October 30, 1951, upon approval of the Congress of the United States, which apportions the waters of certain interstate tributaries of the Yellowstone River which are available after the appropriative rights existing in the States of Wyoming and Montana on January 1, 1950 are supplied, and after appropriative rights to the use of necessary supplemental water are also supplied as specified in the Compact, is administered under the following rules and regulations subject to the provisions for amendment revision or abrogation as provided herein.

Article I. Collection of Water Records

- A. It shall be the joint and equal responsibility of the members of the States of Wyoming and Montana to collect, cause to be collected, or otherwise furnish records of tributary streamflow at the points of measurement specified in Article V (B) of the Compact, or as near thereto as is physically or economically feasible or justified.

1. Clarks Fork

The gaging station known as Clarks Fork near Silesia, Montana and located in NW1/4 SE1/4 sec. 1, T. 4 S., R. 23 E., shall be the point of measurement for the Clarks Fork.

2. Bighorn River (exclusive of Little Bighorn River)

The gaging station known as the Bighorn River above Tullock Creek, near Bighorn, Montana, and located in SE1/4 SE1/4 NE1/4 sec. 3, T. 4 N., R. 34 E., shall temporarily be the designated point of measurement on that stream. The flow of the Little Bighorn River as measured at the gaging station near Hardin, Montana, and located in SE1/4 NE1/4 NE1/4 sec. 19, T. 1 S., R. 34 E., shall be considered the point of measurement for that stream, except that if or when satisfactory records are not available, the records for the nearest upstream station with practical corrections for intervening inflow or diversion shall be used.

3. Tongue River

The gaging station known as the Tongue River at Miles City, Montana, and located in NE1/4 NE1/4 SE1/4 sec. 23, T. 7 N., R. 47 E., shall temporarily be the point of measurement for that stream.

4. Powder River

The gaging station known as the Powder River near Locate, Montana, and located in NW1/4 SW1/4 sec. 14, T. 8 N., R. 51 E., shall temporarily be the designated point of measurement for that stream.

- B. Records of total annual diversion in acre-feet above the points of measurement designated in the Compact for irrigation, municipal, and industrial uses developed after January 1, 1950, shall be furnished by the members of the Commission for their respective States, at such time as the Commission deems necessary for interstate administration as provided by the terms of the Compact. Providing that if it be acceptable to the Commission, reasonable estimates thereof may be substituted.
- C. Annual records of the net change in storage in all reservoirs, not excluded under Article V (E) of the Compact, above the point of measurement specified in the Compact and completed after January 1, 1950, and the annual net change in reservoirs existing prior to January 1, 1950, which is used for irrigation, municipal, and industrial purposes developed after January 1, 1950, shall be the primary responsibility of the member of the Commission in whose State such works are located; providing such data are not furnished by Federal agencies under the provisions of Article III (D) of the Compact, or collected by the Commission.

Article II. Office and Officers

- A. The office of the Commission shall be located at the office of the Chairman of the Commission.
- B. The Chairman of the Commission shall be the Federal representative as provided in the Compact.
- C. The Secretary of the Commission shall be as provided for in Article III of these rules.
- D. The credentials of each member of the Commission shall be placed on file in the office of the Commission.

Article III. Secretary

- A. The Commission, subject to the approval of the Director of the United States Geological Survey, shall enter into cooperative agreements with the U.S. Geological Survey for such engineering and clerical services as may reasonably be necessary for the administration of the Compact. Said agreements shall provide that the Geological Survey shall:

1. Maintain and operate gaging stations at or near the points of measurement specified in Article V (A) of the Compact.
2. Assemble factual information on stream flow, diversion, and reservoir storage for the preparation of an annual report to the Governors of the signatory States.
3. Make such investigations and reports as may be requested by the Commission in aid of its administration of the Compact.

B. The Geological Survey shall act as Secretary to the Commission.

Article IV. Budget

- A. At the annual meeting of each even-numbered year or prior thereto, the Commission shall adopt a budget for operation during the ensuing biennium beginning July first. Such budget shall set forth the total cost of construction, maintenance and operation of gaging stations, the cost of engineering and clerical aid, and other necessary expenses excepting the salaries and personal expenses of the Commissioners. On odd-numbered years revisions of the budget shall be considered.
- B. It shall be the obligation of the Commissioners of the States of Montana and Wyoming to endeavor to secure from the Legislature of their respective States sufficient funds with which to meet the obligations of this Compact, except insofar as provided by the Federal government.

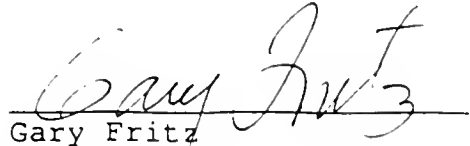
Article V. Meetings


An annual meeting of the Commission shall be held each November at some mutually agreeable point in the Yellowstone River Basin for consideration of the annual report for the water year ending the preceding September 30th, and for the transaction of such other business consistent with its authority; provided that by unanimous consent of the Commission the date and place of the annual meeting may be changed. Other meetings as may be deemed necessary shall be held at a time and place set by mutual agreement, for the transaction of any business consistent with its authority.

No action of the Commission shall be effective until approval by the Commissioners for the States of Wyoming and Montana.

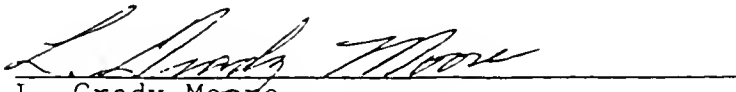
Article VI. Amendments, Revisions and Abrogations.

The Rules and Regulations of the Commission may be amended or revised by a unanimous vote at any meeting of the Commission.


Gary Fritz
Commissioner for Montana


George L. Christopoulos
Commissioner for Wyoming

ATTESTED:


L. Grady Moore
Federal Representative

Adopted November 17, 1953
Amended December 16, 1986

**RULES FOR THE RESOLUTION OF DISPUTES
OVER THE ADMINISTRATION OF THE
YELLOWSTONE RIVER COMPACT**

December 19, 1995

Section I. General Framework

According to Article III(F) of the Yellowstone River Compact.

"In case of the failure of the representatives of Wyoming and Montana to unanimously agree on any matter necessary to the proper administration of this compact, then the member selected by the director of the United States Geological Survey shall have the right to vote upon the matters in disagreement and such points of disagreement shall then be decided by a majority vote of the representatives of the states of Wyoming and Montana and said member selected by the director of the United States geological survey, each being entitled to one vote."

Section II. Purpose and Goal

- A. The purpose of these rules is to clarify and more fully develop the dispute resolution process outlined in Section I.
- B. The goal of the dispute resolution process outlined in these rules is to encourage joint problem solving and consensus building. It consists of three phases -- unassisted negotiation, facilitation, and voting.
- C. Any agreement reached through this process is binding on Montana, Wyoming, and the United States Geological Survey (USGS).
- D. Either state can initiate the dispute resolution process defined in Sections IV, V, and VI, and the other state is obligated to participate in good faith. The states agree that the issues pursued under this dispute resolution process shall be both substantive and require timely resolution.

Section III. Consensus

- A. In the process of administering the Yellowstone River Compact, the representatives from Montana and Wyoming agree to seek consensus.
- B. For purposes of this rule, consensus is defined as an agreement that is reached by identifying the interests of Montana and Wyoming and then building an integrative solution that maximizes the satisfaction of as many of the interests as possible. The process of seeking consensus does not involve voting, but a synthesis and blending of alternative solutions.

Section IV. Unassisted Negotiation

- A. In all situations, the representatives from Montana and Wyoming shall first attempt to seek consensus through unassisted negotiation. The federal representative will not serve as chairperson in the unassisted negotiation process.
- B. During a negotiation process, the representatives from Montana and Wyoming shall identify issues about which they differ, educate each other about their needs and interests, generate possible resolution options, and collaboratively seek a mutually acceptable solution.
- C. To help facilitate negotiations, the representatives from Montana and Wyoming in cooperation with the USGS agree to share technical information and develop joint data bases. Other data sources may also be used.
- D. The USGS shall serve as technical advisor in the two-state negotiations.

Section V. Facilitation

- A. If the representatives from Montana and Wyoming are not able to reach consensus through unassisted negotiation, they shall each identify, articulate, and exchange, in writing, the unresolved issues.
- B. The representatives from Montana and Wyoming shall then jointly appoint a facilitator to assist in resolving the outstanding dispute. If the representatives from Montana and Wyoming cannot identify a mutually acceptable facilitator, the representative appointed by the USGS shall appoint a facilitator.
- C. A facilitator, for purposes of this rule, is defined as a neutral third party that shall help the representatives from Montana and Wyoming communicate, negotiate, and reach agreements voluntarily. The facilitator is not empowered to vote or render a decision.
- D. The facilitator shall assist the representatives from Montana and Wyoming in developing appropriate ground rules for each facilitated session including establishing a deadline for completion of the facilitation process, setting an appropriate agenda, identifying issues, collecting and analyzing technical information, developing options, packaging agreements, and preparing a written agreement. The facilitator reserves the right to meet privately with each representative during the facilitation process.

Section VI. Voting

- A. If, and only if, the representatives from Montana and Wyoming are unable to reach consensus with the assistance of a facilitator, then a dispute may be settled by voting.
- B. The representatives from Montana and Wyoming, along with the representative appointed by the director of the USGS, are each entitled to one vote.
- C. If the USGS representative does not vote in accordance with Article III, then the director of the USGS will select, with concurrence from Wyoming and Montana, a neutral third party to vote.

- D. If the representative appointed by the director of the USGS is not involved in the steps outlined in Sections IV and V, each state shall have the opportunity to present appropriate information to that representative. This information may be presented through both oral presentations and written documents. All information will be shared with the other state.

The representative of the USGS may also consult the facilitator referenced in Section V in an attempt to resolve any disputes.

- E. The USGS shall pay the expenses of the representative appointed by the director of the USGS.
- F. Points of disagreement shall be resolved by a majority vote.

Section VII. Funding

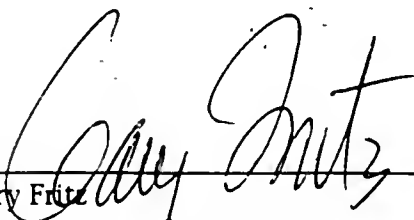
- A. The USGS will pay one-half and the states of Montana and Wyoming shall each pay one-quarter of the expenses of the facilitator, which shall not exceed \$10,000, unless agreed to by both states and the USGS.

Section VIII. Amendments


- A. These rules may be amended or revised by a unanimous vote of the Commission.

Section IX. Execution

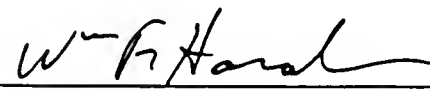
These rules for the resolution of disputes over the administration of the Yellowstone River Compact are hereby executed on the date indicated below.



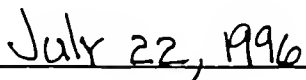
Gary Fritz
Commissioner for Montana



Gordon W. Fassett
Commissioner for Wyoming



William F. Horak
Federal Representative



Date

RULES FOR ADJUDICATING WATER RIGHTS ON INTERSTATE DITCHES

Article I. Purpose

The purpose of this rule is to determine and adjudicate, in accordance with the laws of Montana and Wyoming, those pre-Compact (January 1, 1950) water rights diverting from the Powder, Tongue, Bighorn and Clarks Fork Rivers and their tributaries where the point of diversion is in one State and the place of use is in the other State which have not yet been adjudicated.

Article II. Authority

In accordance with the Yellowstone River Compact, the State of Montana and the State of Wyoming, being moved by consideration of interstate comity, desire to remove all causes of present and future controversy between the States and between persons in one State and persons in another State with respect to these interstate ditches. Article III (E) of the Compact provides the Yellowstone River Compact Commission with the authority "...to formulate rules and regulations and to perform any act which they may find necessary to carry out the provisions of this Compact...."

Article III. Definitions

The terms defined in the Yellowstone River Compact apply as well as the following definitions:

1. "Acre-feet" means the volume of water that would cover 1 acre of land to a depth of 1 foot.
2. "Cfs" means a flow of water equivalent to a volume of 1 cubic foot that passes a point in 1 second of time and is equal to 40 miners inches in Montana.
3. "Interstate Ditches" shall include ditches and canals which convey waters of the Bighorn, Tongue, Powder, and Clarks Fork Rivers and their tributaries across the Wyoming-Montana State line where the water is diverted in one State and the place of use is in the other State.
4. "Department of Natural Resources and Conservation," hereafter called the "Department," means the administrative agency and Department of the Executive Branch of the Government of Montana created under Title II, Chapter 15, MCA which has the responsibility for water administration in that State.

5. "Water Court" means a Montana District Court presided over by a water judge, as provided for in Title III, Chapter 7, MCA.
6. "State Engineer" shall be the current holder of the position created by the Wyoming Constitution as Chief Water Administration Official for the State of Wyoming.
7. "Board of Control," hereinafter called the "Board," is defined as the constitutionally created water management agency in Wyoming composed of the four Water Division Superintendents and the State Engineer.
8. "Superintendent" is the member of the Board who is the water administration official for the Water Division where the interstate ditch is located. (The two Water Divisions in the Yellowstone River drainage are Water Division Numbers Two and Three.)
9. "Date of Priority" shall mean the earliest date of actual beneficial use of water, unless evidence and circumstances pertaining to a particular claim establish an earlier date.
10. "Point of Diversion" is defined to be the legal land description by legal subdivision, section, township, and range of the location of the diversion structure for an interstate ditch from a natural stream channel.
11. "Place of Use" is defined to be the legal land description (legal subdivision, section, township, and range) of the lands irrigated by an interstate ditch.
12. "Person" is defined as an individual, a partnership, a corporation, a municipality or any other legal entity, public or private.
13. "Claimant" is defined as any person claiming the use of water from an interstate ditch as herein defined.

Article IV. Procedures

The procedures for determining and adjudicating water rights associated with interstate ditches shall be categorized as follows: (A) Where the point of diversion is in Wyoming and place of use in Montana, and (B) Where the point of diversion is in Montana and place of use in Wyoming.

A. Wyoming Procedure

1. The Yellowstone River Compact Commission will provide a claim form to be completed by the claimant that will describe the location and point of diversion and land being irrigated, the priority date claimed, method of irrigation and such other information required to describe the claim. (A sample form for this purpose is attached.)
2. The Yellowstone River Compact Commission will send the claim form to water users on the interstate ditches.
3. Water users will complete the claim form and file it with the Yellowstone Compact Commission, which, when found to be correct and complete, will be forwarded to the Board for verification.
4. Upon receipt of the form, the Board shall forward it to the appropriate Superintendent, who, in cooperation with the Department, will validate the information including the use that has been made of the water, the number of acres and location of lands being irrigated, the priority date, and all other relevant information. The Superintendent and the Department will utilize aerial photography and other information to have prepared a reproducible map showing the location of the ditch system, lands irrigated, point of diversion, etc., of the claim.
5. After the validation procedure, the Superintendent will hold a hearing, after appropriate notice and advertisement, at which time the claimant shall describe, in detail, the use that has been made of the water and the lands that are being irrigated, establish a priority date, etc. Costs incurred in advertising shall be paid by the claimant. If a single hearing is held to consider several claims, the costs of advertising shall be shared equally among the claimants. Anyone who opposes the claim shall appear and state the reasons, if any, for opposition to the claim. If there is no opposition to the claim, cost incurred in holding the hearing shall be paid by the claimant. If protestants do appear and oppose the claim, hearing costs will be paid 50 percent by the claimant and 50 percent by the protestant, or if there is more than one protestant, the remaining 50 percent shall be shared equally among the protestants.
6. At the conclusion of the hearing, the Superintendent shall forward the record to the Yellowstone River Compact Commission with his findings and recommendations. The Yellowstone River Compact Commission will make the

determination of the amount of the right, the location, and the priority date, and then send the record to the Board.

7. The Board shall review the record and integrate it into its water rights system. Upon entry of the record by the Board, the information shall be forwarded to the Department and the Chairman of the Yellowstone River Compact Commission.
8. Upon the entry of the right into the Board's records, it will have the following attributes:
 - a. The right will be a Wyoming water right with a priority date as established by this procedure.
 - b. The amount of the right will be determined as provided by Wyoming law.

B. Montana Procedure

1. The Yellowstone River Compact Commission will provide a claim form to be completed by the claimant that will describe the location and point of diversion and land being irrigated, the priority date claimed, method of irrigation and such other information required to describe the claim.
2. The Commission will send the claim form to water users on the interstate ditches.
3. Water users will complete the claim form and file it with the Yellowstone River Compact Commission, which, when found to be correct and complete, will be forwarded to the Department for verification.
4. Upon receipt of the form, the Department, in cooperation with the Wyoming State Engineer's Office, will validate the information, including the use that has been made of the water, the number of acres and location of lands being irrigated, the priority date, and all other relevant information. The appropriate Superintendent and the Department will utilize aerial photographs and other information to have prepared a reproducible map showing the location of the ditch system, land irrigated, point of diversion, etc., of the claim.

5. The Department will then forward the record to the Yellowstone River Compact Commission with its findings and recommendations. Upon approval by the Commission, the record shall be submitted to the Montana Water Court for adjudication. A duplicate record will be forwarded to the Wyoming State Engineer's Office, the Board, and the Chairman of the Yellowstone River Compact Commission upon adjudication.
6. Upon adjudication of the right by the Montana Water Court, it will have the following attributes:
 - a) The right will be a Montana water right with a priority date as established by this procedure.
 - b) The amount of the right will be determined as provided by Montana law.

Article V. Exclusions

- A. These rules recognize the limitation in Article VI of the Yellowstone River Compact regarding Indian water rights.
- B. These rules shall not be construed to determine or interpret the rights of the States of Wyoming and Montana to the waters of the Little Bighorn River.

Article VI. Claim Form Submission Period

All claims must be submitted to the Yellowstone River Compact Commission, c/o District Chief, United States Geological Survey, 821 E. Interstate, Bismarck, ND 58501, within 90 calendar days after the claimant has received the claim form from the Commission. The blank claim form will be sent certified mail to the water user and the submission period of 90 calendar days will begin with the next day following receipt of the form, as evidenced by the certified mail receipt card. For good cause shown in writing, an extension of time beyond the 90 days for submittal may be obtained from the Commission.

YELLOWSTONE RIVER COMPACT COMMISSION

WYOMING

GORDON W. FASSETT
STATE ENGINEER
HERSCHLER BUILDING
4TH FLOOR EAST
CHEYENNE, WYOMING 82002
(307) 777-7354

UNITED STATES

WILLIAM F. HORAK
CHAIRMAN
U.S. GEOLOGICAL SURVEY
821 E. INTERSTATE AVENUE
BISMARCK, NORTH DAKOTA 58501
(701) 250-4601

MONTANA

GARY FRITZ
ADMINISTRATOR WATER RESOURCES DIVISION
DEPT. OF NATURAL RESOURCES & CONSERVATION
1520 EAST SIXTH AVENUE
HELENA, MONTANA 59620
(406) 444-6603

YELLOWSTONE RIVER COMPACT COMMISSION

CLAIM FORM FOR INTERSTATE DITCHES

1. Name of ditch or canal: _____
2. Source of water supply: _____
Tributary of _____
3. Name of claimant: _____
Address _____
City _____ State _____ Zip Code _____
Home Phone No. _____ Business Phone No. _____
4. Person completing form: _____
Address _____
City _____ State _____ Zip Code _____
Home Phone No. _____ Business Phone No. _____
5. Method of irrigation: _____
6. Point of diversion: County _____ State _____
Headgate located in the ____ $\frac{1}{4}$ ____ $\frac{1}{4}$, Section _____, T. ____ R. ____

(a) Description of headgate: (Briefly describe the materials and general features, date constructed or last known work, general condition.) _____

1. What flow rate has been claimed?

_____ ☐ cubic feet per second

☐ gallons per minute

☐ miner's inches

2. What volume of water has been claimed?
_____ acre-feet

7. Dimensions of ditch at headgate: Width at top (at waterline) _____ feet; width at bottom _____ feet; side slopes (vertical:horizontal) _____:_____; depth of water _____ feet; grade _____ feet per mile.

8. Place of use and acres irrigated: County_____ State _____
Give legal subdivisions of land owned by you on which water
is being used (acres claimed): An example field is shown in
the first line.

30

9. Describe any additional uses of water claimed from the ditch:

10. Date of first beneficial use of water (priority date) on lands described above for _____ Ditch is _____
(mo/day/yr)
and shall be the same for all lands claimed on this form.
11. Has irrigation water been diverted onto all lands shown in the above tabulation each year since completion of works?____
If not, state exceptions and reasons therefore: _____

12. Attach documentary evidence or affidavits showing your ownership or control of the above lands, as well as the historic use of water on these lands. _____

13. What permit or claim numbers have been assigned to known records filed with either the Wyoming State Engineer's Office or the Montana Department (DNRC) for irrigating the above lands? _____

14. Have personnel in the Wyoming State Engineer's Office or the Montana Department (DNRC) been contacted to obtain the information given in No. 13? () Yes () No
15. Describe any flumes or pipelines in the ditch conveyance system: _____

CONVERSION TABLE

<u>Multiply inch-pound units</u>	<u>By</u>	<u>To obtain SI units</u>
<i>Length</i>		
feet (ft)	0.3048	meters (m)
miles (mi)	1.609	kilometers (km)
<i>Area</i>		
acres	4,047	square meters (m ²)
	0.4047	*hectares (ha)
	0.4047	square hectometer (hm ²)
	0.004047	square kilometers (km ²)
square miles (mi ²)	2.590	square kilometers (km ²)
<i>Volume</i>		
cfs-day or second-foot day (ft ³ /s-day)	2,447	cubic meters (m ³)
	0.002447	cubic hectometers (hm ³)
cubic feet	0.02832	cubic meters
acre-feet (acre-ft)	1,233	cubic meters (m ³)
	0.001233	cubic hectometers (hm ³)
	0.000001233	cubic kilometers (km ³)
<i>Flow</i>		
cubic feet per second (ft ³ /s)	28.32	liters per second (L/s)
	28.32	cubic decimeters per second (dm ³ /s)
	0.02832	cubic meters per second (m ³ /s)
acre-feet per year (acre-ft/yr)	1,233	cubic meters per year (m ³ /yr)
	0.001233	cubic hectometers per year (hm ³ /yr)
	0.000001233	cubic kilometers per year (km ³ /yr)

*The unit hectare is approved for use with the International System (SI) for a limited time. See National Bureau of Standards Special Bulletin 330, p. 12, 1977 edition.



LOCATION MAP

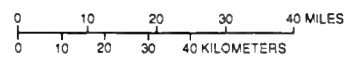


YELLOWSTONE RIVER COMPACT COMMISSION

YELLOWSTONE RIVER BASIN

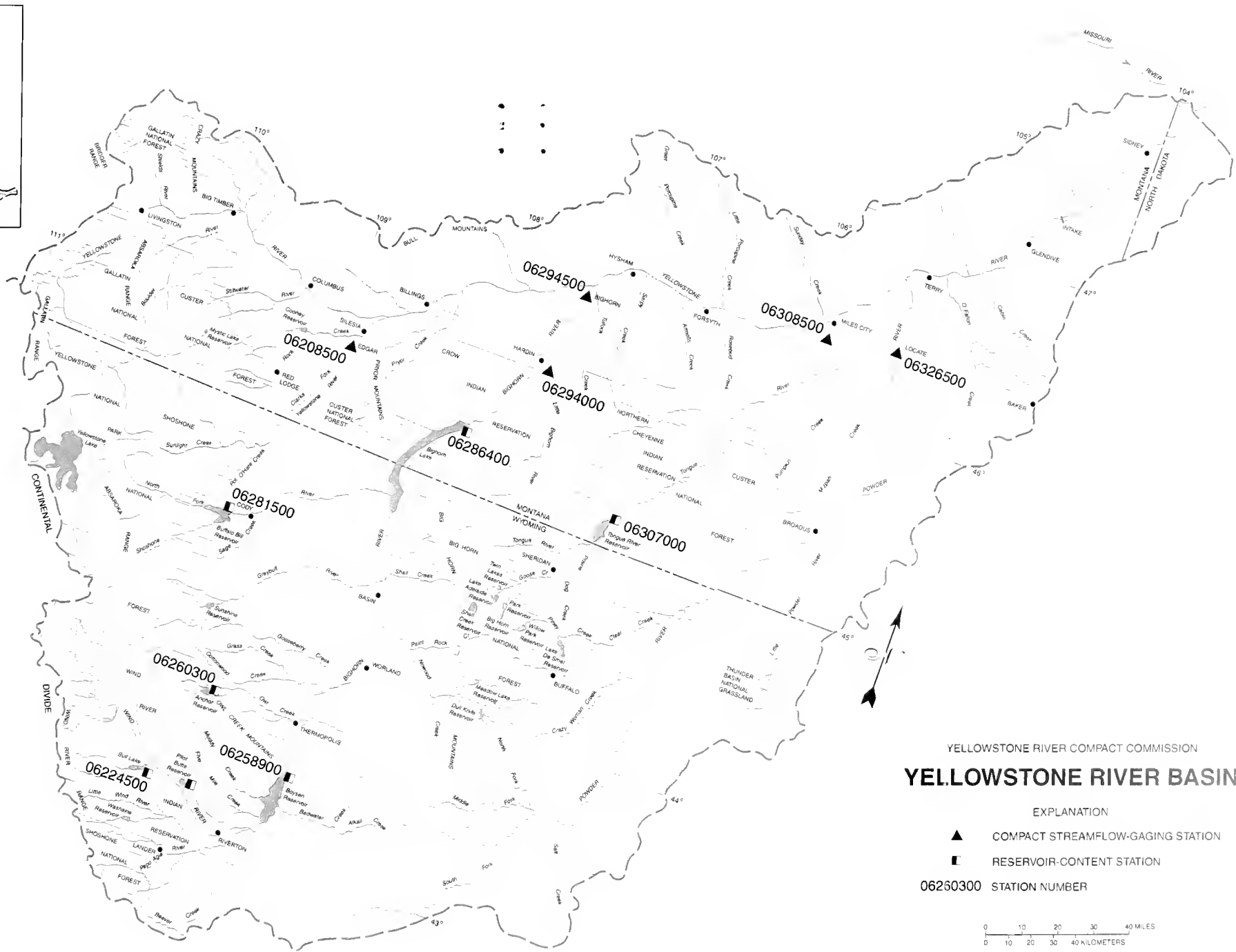
EXPLANATION

- ▲ COMPACT STREAMFLOW-GAGING STATION
- RESERVOIR-CONTENT STATION
- 50300 STATION NUMBER





LOCATION MAP



MAP SHOWING LOCATIONS OF COMPACT STREAMFLOW-GAGING AND RESERVOIR-CONTENT STATIONS

